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PSYCHOGENESIS.

TRANSLATED FROM THE GERMAN OF DR. W. PREYER, PROFESSOR OF PHYSIOLOGY, AND DIRECTOR OF THE PHYSIOLOGICAL INSTITUTE OF THE UNIVERSITY OF JENA, BY MISS MARION TALBOT.

Psychogenesis, or the development of the soul, has been not infrequently the object of consideration by prominent investigators in ancient as well as in modern times. Exhaustive works have been written on the history of the spiritual development of mankind in general, and on the progress in perception, action, and knowledge in particular. The whole history of philosophy is cited as a progressive development of cognition. Psychologists recognize that it is necessary to compare the spiritual life of man with that of animals, and to follow it out through all its stages. Since this requirement has not been met with sufficient readiness, modern physical empiricism, strengthened by many great victories in the contest against speculation, has undertaken the gigantic enterprise of answering for itself, as its own legitimate property, even the highest problems of psychology. Doing away with the extreme differences between man and animal, it maintains that all human spiritual activity is developed gradually and naturally from the spiritual disposition and instincts of animals.

But whether the privileges of the human race will ever lose their inner value by such experiments, or will gain by the records of natural history, these efforts have already brought about this good, that the psychical indications of animals, their feelings and instincts, their volition and reflection, are more carefully examined than formerly. The development of the human soul is certainly not shown by that of the animal soul alone, however closely connected they may be.

But, in any case, the theory of psychogenesis will receive more aid from this side than from the cleverest hypotheses of the connection between soul and body. It is not that such hypotheses are to be rejected because they make use of the imagination; on the contrary, they can be very useful, on account of the incitement which they give to the investigation of facts.

Thus, the remarkable work of the Abbé Condillac, "A Treatise on the Sensations," which appeared in 1754, and to-day, as then, exercises a fascinating influence on the reader, is indeed fantastic in its suppositions, but it is a powerful stimulus, because of its uncommon acuteness. A statue, in whose place the reader must continually imagine himself to be, first receives only the sense of smell, next hearing and taste, then sight, and finally touch. At every stage the spiritual state of the statue is described. But can we comprehend through this description the mental state of a man born with one or more senses? Not in the least.

Why give life to artificial images, which are the product of a human hand, and attribute spiritual properties to them, while the full natural life, in its entire immediateness, is daily revealed anew in the closest proximity?

He who wishes to watch the growth of the human intellect must, above all, make the mind of the child the object of methodical investigation. Even the new-born infant, in all its pitiable helplessness, is an extraordinarily interesting object for physiology, which must furnish the foundation for all empirical psychology. And then the young child! It is almost incomprehensible that the gradual development of its senses, its will, its understanding, its passions, its virtues, attracts the attention of its relatives alone. For thousands of years children have been born and lovingly tended and watched by their mothers, and for thousands of years learned men have disputed over the mental growth of the child, without even studying the children. As a rule, the experimental physiologist seldom visits the nursery, even when he is a father. The history of the psychological development of a child, during the first years of its life, has never yet been scientifically written.

Physicians have labored much over the diseases and great mortality of infants, over their nourishment, care, and growth, and many works have been written on the subject. On the contrary, observations on the spiritual growth are scanty and incomplete. Several inquirers, indeed, in ancient as well as in modern times, imparted, in short treatises on the senses of the new-born human being, some wonderful observations, which acquire a higher value because they are so few in number, but no right conclusion was reached with these observations and experiments. The physicists, physicians, and linguists, who have recently taken part in psychogenetic investigations of new-born and very young children, have until now brought forward but little material based on fact for a history of spiritual development. The same is true of teachers, at least in respect to the earliest period of life. Before methodical instruction begins, during the time which belongs to the child's mother, no tutor speaks a word. But precisely then the bud is unfolding. The child's brain grows as much in the first year as in the whole of its after-life.

Education is certainly a difficult work, but it is still more difficult to understand that it is successful. Each one cannot learn all that another learned before him. Only certain qualities are born with every man. The true educator must start from the given, hereditary qualities, and take into account their differences; he must not measure all with the same rule, nor dress all after the same pattern. The one has these capabilities, the other those. So it is from the practical standpoint of the educator also a matter of great importance to investigate exactly the very first impressions and expressions of the child.

On this account it might be desired that more educated men, thoroughly versed in physiology, should carefully and independently observe a larger number of young children, and compare the results, or that fathers should exchange observations made on their own children, and should supervise and critically arrange those made on the children of others. A single individual easily falls into the error of generalizing that which applies only to his own children. Moreover, every father has his own principles of education.

To begin with, it is necessary that each one should keep as exact a journal as possible concerning his child from its very birth. I can assert, from my own experience, that during the first two years hardly a day passes in which there is not an observation to enter in the diary, which is of value psychogenetically. This only is necessary: to busy one's self with the little creature for some time, at least several hours a day; to strictly forbid that discipline of even the youngest children which is to-day, unfortunately, too highly esteemed, and to seek to answer stated questions by means of constantly repeated observations and harmless experiments.

To what these last must relate follows from the consideration of that which in general is the indispensable and primary condition of spiritual expression even in adults.

In every case there must be a free entrance for the *senses.* Without them there is no spiritual activity. Impressions must be there, garnered in great numbers; recollections must be stored up and constantly recalled, before the soul can manifest itself, before *comparison*, the lowest function of the understanding, can take place. On this account no spiritual activity is recognizable in deep sleep. The sleeper is blind; his ears do not hear, the organs of taste and of smell are at rest. The sensation of touch, every feeling, is extinct; the muscles of sight asleep; even the silent mouth is frequently open. It is impossible to distinguish in sleep the spiritual capabilities of the blind mute from those of the most intelligent boy. There is, besides, the examination of the manner and the order in which the senses of the new-born child develop their activity.

However, the senses are not the first thing, but the *motions;* for, before any sense is awakened by external impressions, to the mother's delight, the child moves. The peculiar motions of the limbs of a new-born child must, like all those of a later period, have their cause. These causes must be sought for in the first place. Accordingly, the movements and sentient activity of the new-born and nursing child make the starting-point. Their changing relations lead a step farther, and the development of the *will* can then begin. When this asserts itself, the understanding appears, and, finally, united with the will, gives the germs for the control of motion, for the realization of perceptions, and for the communication of personal opinions by means of speech.

The attempt to follow this ascending psychical development is attractive and instructive, through the nature of the problems which it reveals.

The primary conditions of all spiritual life are the child's will, perception, and thought.

First of all is the development of the will. Screaming, the first expression of life in the new-born child, is pointed out as the first expression of will. The great Immanuel Kant thought that screaming had in it the sound of indignation and angry wrath! Not because something pains him, but because something vexes him, does the new-born human being scream, and the reason is that he wishes to move, and feels that his inability to do so is a fetter which takes away his liberty! On that account the child loudly proclaims its existence, thinks Kant. Did he perchance, in his long unmarried life, ever see and hear new-born children? He would then surely have judged otherwise.

There is also little value in the general notion that the cause of the first scream, as if a conscious expression of pain, is a painful or at least disagreeable sensation, a feeling of cold on the entrance of air into the lungs. The older view is as valuable, that the peeping of the chicken in the egg, before it creeps forth, and the first scream of the new-born child, are cries for help; as if the young being had a suspicion of its helplessness and of anything beyond itself!

These and similar hypotheses are untenable, because it must be seen that children born without understanding can scream precisely as well as sound children, from indignation and anger, from a feeling of pain and discomfort, in general from a conscious spiritual state. On the other hand, it is very probable that the reflex sounds from brainless animals, which occur regularly after slight irritation—for example, after stroking the back—will give the key to the explanation. For the question is on the purely reflex excitations of the voice, just as in laughter, when the nerves of the skin are excited by tickling. There are frequently new-born children who do not scream at their first breath, but sneeze. Sneezing is a purely reflex action, conditioned by the excitation of sensible nasal nerve-fibers, which is transferred to the respiratory nerves and muscles without the participation of the will, and results mechanically in a convulsive breath. Emotion, passion, deliberation, and intention ordinarily cause or accompany the first scream or whimper precisely as little as they do the sneeze. It is of no greater psychical importance than a snore.

But the motions of the limbs of the new-born child? Are they not a sign of free-will, or expressions of an uncomfortable state?

The reaching forth of the arms and legs, now slowly, now quickly; the spreading out of the fingers and toes; the slow and then impulsive motions; the pulling of the feet and hands, as well as the remaining in a cramped, almost egg-shaped position—make an impression of aimlessness on every impartial observer. The repeated frowns and distortions of the face might sooner be taken for voluntary contractions of the muscles. But if with these is compared the helplessness which accompanies all the movements of the infant, if the fact is considered that it does not prevent its head from falling, cannot take hold of anything for some months, nor make other simple and co-ordinated movements which come at the will of a grown person, then the first peculiar motions of the extremities will not be taken as the expression of reflection or free-will.

Of what kind, then, are these muscular contractions which never reappear in after-life. They seem to take place in a similar manner only in animals suddenly awakened from their winter sleep, and sometimes in ordinary sleep and on awakening.

There is no external excitation present, which either works as a direct irritation upon the nerves of motion or contractile fibres, or excites the nerves of sense reflexively, and thus causes the motions. As the sleeping infant moves like the one awake, only more seldom and more slowly, nothing can be said about an attempt to imitate at first. Imitative movements occur for the first time in the second half-year of life.

If no external causes for the wonderful movements of new-born human beings and animals can be found—for the well-fed, warm, dry, comfortably-placed infant also performs these aimless exercises of its limbs—internal causes must be sought. Such are either acquired or hereditary.

Acquired causes of motion presuppose a manifold experience. Whoever moves with forethought, in other words, acts, has been able to acquire the motive for his action only from many perceptions, and from observations on the conduct of others. The new-born child is wholly incapable of such actions, because it is entirely without experience. It does not act, but only moves.

But there are still other acquired muscular actions, namely, certain movements of expression—those which arise from imitation and those which are constantly employed because they show themselves to be necessary in the interest of self-preservation. All such *expressive* movements, which are characteristic of uncivilized people and vivacious South-Europeans, presuppose a conception of one's own existence. They are to express this condition, announce it to others, or give others a knowledge of one's own self. Such gesticulations acquire great energy in passion.

This incomplete description of them will suffice to show that the new-born child, who has no idea of its condition and knows no passion, cannot possibly speak the language of passion. Whether the stretching out of the little arm appears so much like a categorical command, whether the withdrawing of the hand, as if before an invisible power surrounding the little being, seems to be the result of fright, whether the unconscious demeanor appears so similar to the symptoms of a desire to act or to the expression of a wish to free itself from an uncomfortable condition—in no case does the appearance afford the right explanation. For the little child has not yet had any experiences of all these conditions and the means of expressing them. It does not yet know them.

So only direct hereditary causes of action remain. It is not that the human being moves itself as it does because its father and ancestors did so when they were young; that would only be removing the difficulty another step back; but it moves itself in this peculiar way because its principal nervous motor organs, its ganglion cells of motion, if they are developed, discharge irregularly the inherited superfluous stock in impulsive movements. The steam-engine discharges its superfluous steam. The fire of youth burns at first without need of stirring; the full life's cup overflows.

Because an external cause for the first movements of the new-born child cannot be found, they have been called instinctive. But instinct, which is intelligible only when conceived as inherited memory, has, without exception, a definite aim. It is adapted to something useful to the organism for many generations. For instance, a new-born child sucks instinctively; it is not a purely reflex action, for then the child whose appetite had been appeased would still suck. On the contrary, the movements of the extremities of very young animals and children are directed to no specific purpose. They are neither reflex nor instinctive, but impulsive. They have also been named automatic and spontaneous. These expressions, however, can easily be misunderstood. The nerve of motion, with its muscular fibres, follows the slightest central impulse of the spine in the brainless infant as in the fully developed. It depends upon the soundness of the spine. New-born children are spinal beings, as Virchow appropriately remarked. They still lack the controlling power of the understanding. The controlling nerves are not yet developed, hence hyperkinesis, the tendency to convulsions, the vivacity of youth, which never recurs later, and knows nothing of self-control. The more the intellect, and with it the understanding, develops, the more restrained will be the superfluous movements. But, even in later life, only a few succeed in performing purely useful muscular contractions. In sound health it is a sign of the highest distinction and most perfect education to make, under all circumstances, no superfluous motion. This rare degree of self-control and volition forms a strong contrast to the unrestrained mobility of the child, and shows the powerful influence which example, firm command, and especially external impressions, have upon the development of the will—on the *development*, not the *genesis*, of the will. It is an error to think that the will arises from impressions in youth.

As one cannot put a plant together artificially from the constituents by which it perfects itself, but can only let it develop itself from the germ, be it the tiniest seed-corn, so a will can never be created in a child from external experiences, but can only be suffered to develop itself from the inborn germ of will. At first the child is ruled only by its impulses, its bodily needs—for instance, hunger—and follows its instinct to satisfy them where and when it can, without the slightest regard for anything else, without reflection and without will. The contact of the lips with a finger suffices to produce sucking, and the reflex action of swallowing follows regularly upon this instinctive movement.

No will is yet apparent here. After hunger is appeased, the contact of the lips does not result in sucking. And this state, too, is neither no expression of will nor volition, but only a sign that the instinctive impulse has been gratified. When a bird has built its nest, it does not straightway build a second, because it has satisfied its instinct by the formation of the first.

The first appearance of the awakening of the child's will seems to be given rather in the holding of the head than in the movements of the limbs and lips. Even the chicken which has just left the shell cannot raise its head during the first hour. I have often noticed this inability. And when it can raise its head, it cannot yet stand. And when it has half raised itself, it often remains for some time picking at bits of grain near by, or peeping in a loud voice, without changing its position, before it takes a step.

From that to running, the time for exercise is short indeed. But in the beginning it stumbles frequently. What occurs here within a day at most requires more than a year in the case of a human being. If the infant is held upright at first, its head falls forward or sidewise. It cannot hold it straight. At the end of fourteen weeks I found that attempts to hold it straight were more often successful. Here plainly began a voluntary exertion. After four months the head became well balanced, and no longer fell forward or backward or sidewise. The cause here is not weakness of the muscles, because, at a much earlier period, turning motions of the head were accomplished, conditioned through reflex action. To be sure, the muscles of the child, which are in many respects like the tired muscles of an adult, are at first too weak to hold up the head, but they are no longer so after three months.

The poise of the upper part of the body follows that of the head. The first successful attempts to sit or get up usually occur in the second quarter-year. The efforts of the child, which has been placed in a sitting posture by means of cushions and props, to maintain this are plainly repeated every day for weeks, to its own amusement, until finally, at about the tenth month, security in maintaining equipoise in sitting is attained for the whole future life. The will has subdued the muscles, which were disobedient at first. The advantages of the new position, especially in eating, have fostered the desire to sit, and thereby strengthened the will. The child *will* sit.

Thereupon, it generally learns to stand soon—when healthy, at the end of the first year. After countless unsuccessful attempts to stand by chairs, tables, or against the wall in a corner of the room, it suddenly succeeds in standing for the first time. This upright position, natural only to man among mammals, is especially noteworthy, because he appropriates it quite by himself without any instruction. Let the infant be left to himself, when he throws himself hither and thither upon a blanket in the greatest helplessness, then begins to creep, next grasps firm objects which he can reach, let him not be disturbed in his efforts, daily repeated with wonderful persistence, and undertaken again and again, in spite of their fruitlessness; then he will certainly be seen some day—in his fourth quarter-year—raising himself and standing upright.

Whence come these first purely human expressions of will, which at a stroke bestow upon the child the majesty of the dignity that belongs to mankind? He stands upright before his happy parents. He does not fall down immediately. He has taken unspeakable trouble to raise himself, has reached his goal, and has thereby given proof that his will overcame the weight of his body and the stiffness of his limbs. Herein lies a further victory of his soul over matter. An explanation of this cannot at present be given. For the desire alone for objects above him or for his friends can as little explain his great efforts to raise himself as imitation alone, especially since that desire is satisfied to the fullest extent by assistance from all sides, and efforts to imitate ordinarily begin later. We can thus only admit that the great advantages which the upright position affords in the universal competition of living beings with each other made it long ago habitual, so that it became hereditary. But it is not yet clear why the well-nurtured child, who is in want of nothing, busies his growing will in this direction particularly.

The same holds good for the further acquisition of walking, which equally makes its appearance by itself even when a child grows up alone. It is problematical in its beginnings, because no ground appears for the alternate bending and stretching of the limbs, when the child first stands upright. Only upon the constantly repeated raising and lowering of the foot of the child, supported by some one or supporting himself, does the possibility of learning to walk depend. The same flexions and extensions take place also when lying down, or in the bath or the cradle, but the regular alternation of the two, when the child is placed upright, is something different and probably hereditary, like sucking. Several months elapse before the first successful attempt at walking, and if the child is allowed to creep and move itself hither and thither, without hindrance, it soon begins to walk without any instruction. It is impossible to attribute to it the knowledge of the advantages which walking gives, the understanding that it will be better able to control its surroundings by eye and ear, and attain more easily everything desirable; the will, rather, comes into account, developing at the same time with the growth of the muscles and nerve-cells and nerve-fibres of the brain, bringing the muscles into condition for contraction, as is shown in later life to be most advantageous, and as likewise happened regularly in the case of its ancestors. So firmly have the marks of that impulse for motion impressed themselves on the nervous central organ, so frequently has the will trodden these nerve-paths and no others, that soon, after the first steps of development in the motor apparatus of every new-born child, they show themselves to be the most customary. In other words, the first movements in walking are instinctive; the impulse to change one's place is so strong that it is not satisfied by creeping alone.

It is on this account much to be condemned that in the nursery special instruction in walking is given, with or without appliances, such as go-carts and the like. Moreover, this is ordinarily begun too early—much earlier than is good for the child, on account of the slow growth of its bones. The frequent occurrence of bow-legs is, in part at least, attributable to this circumstance. Creeping is too often forbidden, although it is the natural school preparatory to walking, and contributes much to the child's spiritual development. For the beginner, longing for new impressions, should not be deprived of the liberty of moving to a desired object, of beholding and touching it, nor of the opportunity of making countless little journeys of exploration.

The time of the first successful attempts at walking varies, even with children of the same family. One runs quickly at eight months; another is still awkward at two years. Much depends on the surroundings, as is well known. If a child grows up with other children who can walk, or are learning to do so, it will, as a rule, walk earlier without support by emulating them than if it grew up alone. .But, in the latter case again, the constant repetition of artificial instruction or training can considerably shorten the natural length of time. In general, the child will first begin to walk when it wishes to walk. It was at the beginning of the fifth quarter-year that a child, which I was observing carefully, standing freely on its feet, suddenly and for the first time trotted around the table, tottering or staggering, indeed, like an intoxicated person, yet without falling. And from that day on it could walk, at first only quickly and hastily, little less than trotting, with arms outstretched, as if it were intent on preventing a tumble forward, then more slowly and surely. Within the following month it stepped over a threshold an inch high, clinging at the same time to the wall, and frequently, at this time, it was seen dangling its outstretched foot, or raising it too high, or setting it down with a stamp, like a person suffering from spinal disease. The will but imperfectly controlled the muscles of walking. The impulse to move was at times too strong, and at times too weak: The proper degree of strength was lacking. Long before this widely-developed activity of the will is shown, the gradual growth of the will power can be observed in another spontaneous movement, namely, the first grasping motions. Great attention is required to follow the development of grasping, because, at times, it rises at a bound from lower to higher steps, and at other times advances so slowly that progress is generally seen only after weeks and months.

In the first quarter-year a pencil placed in the little hand is grasped by the fingers; even in the third month the thumb also is employed in grasping, not independently, but as if it were a finger, and the infant, in general, does not notice that it is now holding something in its hand. It holds the little object "mechanically" fast, "without knowing anything of it," as we would say of an older person in the case of absent-mindedness. At this time every child when awake moves its arms aimlessly about in the air. So it naturally happens that a finger of an approaching hand meets the child's little hand, and is held fast by it with the help of the thumb, so that it seems as if it had been grasped; this is the more delusive the more passively the captive finger with the arm is allowed to be led hither and thither. In truth, there is no trace present here of an intentional grasp; but only accidentally does the little hand hold the objects put in it longer and more firmly than formerly, without stretching toward them, somewhat as a crab clings to a finger placed between its claws.

The introduction of the hand into the mouth, which occurs regularly during the first months, is likewise wholly involuntary. If the arms move aimlessly about in the air, a hand easily reaches the mouth, and the fingers are then sucked like every other properly-shaped object which comes between the lips, because sucking is associated from the beginning with an agreeable feeling. So it comes to pass that this sucking the hands soon becomes a habit, even before there is any capacity for grasping. The child does not see its mouth, and is only conscious of it after touching it, and can therefore have no desire at first to reach after it. It is rather the chance contact with the lips, after the involuntary movement of the arms, which results in sucking the fingers. The movement of the hand to the mouth is repeated later, because it has that agreeable effect without any knowledge of the causal connection.

In the seventeenth week I saw for the first time eager efforts to grasp an object to which the attention was directed. It was a small India-rubber ball, which was beyond reach—but the child reached after it. When the ball was placed in its hand, it held it for a long time very firmly, put it to its mouth, held it close to its eyes, and looked at it then with a peculiar new and more intelligent expression of countenance. On the following day the awkward but energetic attempts to seize all kinds of objects which were held out within sight of the child were more frequent. Thus it fixed its gaze either on the object—*e. g.*, a pencil, and grasped three times in succession at it when placed twice its arm's length away, or on its own hands, especially when these had once grasped successfully.

At the same time the expression of countenance betokened the most eager attention, like that of the zealous botanist when he sees a new or peculiar flower. After another day the repeated reaching out for everything within range of the arms seems to cause the child pleasure. But wonder is aroused at the same time, and then a great step forward has occurred. The Greek philosophers were not wrong in thinking that the child's first astonishment denoted the awakening of its soul.

In these efforts to grasp objects, even when they fail, the little fingers are beheld with astonishment by all infants. Probably the child has expected the contact, and when it takes place wonders at the novelty of the sense of touch. The object, which has once been grasped, continues to be held, watched, and put in the mouth, and passes hither and thither from one hand to the other. The examination evidently becomes more thorough. But soon the stretching out of the arms, as if to grasp something, will be the expression of the strongest desire.

At the end of the fourth month the child, for the first time, uplifts both arms toward its parents with an indescribable expression of longing. This transition from reaching after inanimate things, in order to get hold of them, to reaching after the parents in order to be nearer them, is sudden. On the other hand, its own arms and feet appear to the child for months to be something strange, not belonging to it, which it wonders at, beholds attentively, examines like interesting objects. It takes hold of its own feet with its hands and puts them to its lips; even in its fifth quarter-year it bites its own arm so that it cries for pain; it offers a cracker to its own feet for a taste just as to the wooden horses with which it plays. No trace is evident of self-knowledge or self-consciousness. Still later the child strikes itself, as if for rebuke, upon the hand which broke the toy, as if the hand operated in some sort on its own account. But the grasping carried on indefatigably leads gradually to handling and to the knowledge of the individuality and the unity of the ego. That is to say, the newly discovered fact, that the thing which has been seen and longed for is also the one which has been touched and gives new sensations, excites the child's attention. The light and the dark, the colored, the bright, now appears also smooth and rough, heavy and light, hard and soft, warm and cold, and this combination of two and three kinds of sense in one object causes satisfaction. It is one and the same apple which appears red and green, smooth and heavy, cold and hard, and also smells and tastes agreeably. This union of sensations from seeing, touching, smelling, and tasting at the same point, excites astonishment and meditation, and awakens the inborn, insatiable impulse of the human soul for the causes of its sensations.

Nourishment is afforded this unconscious instinct of causality through gradual perfection in grasping, especially by means of the growing sense of touch. The child scrapes, scratches, rubs the objects it has seized, turns them round and round, takes them apart and tries to put them together. At the time when it seizes the candle-flame with its hand, when it puts its bread against its cheeks, chin, or nose, instead of in its mouth, and wants to reach out through the window-pane, the connection of sight and grasping has already been so perfected that the child deliberately puts from one hand into the other a single hair, which has by chance been found by it on the carpet. It grasps with deliberation.

Now the will is developed. If the causes of the sensations of sight and taste, especially of all the excitations of the sense organs, occasioned by external impressions can be found in part by grasping objects, then grasping becomes arbitrary. The will has developed from the original longing. The remembrance of the satisfactory state of things which followed a successful attempt at grasping awakens the idea of grasping at the sight of a new object, and at the same time the psychomotor impulse to effect the necessary movement. This impulse is called will. It is, indeed, quite weak with the child, for self-control is lacking, but the stubbornness of early youth shows frequently enough how far the untrained will-power can deteriorate. In its little sphere the passionate refusal of the boy often accomplishes more than is wished by the parents, and, very early, will stands irreconcilably opposed to will.

But is it not precisely so in later life among grown men? The man's will reveals itself in varied modes. He calls to life and slays, he builds and tears down, he wages war and concludes peace, he unites and separates, threatens and flatters, wounds and heals, blesses and crushes. He changes the earth's surface, and designedly interferes with the natural development of the animal and plant world; in the course of his development he constantly subdues more and more the forces of nature, and constantly controls more and more the most intractable. The will-power is the mightiest weapon in the struggle for existence. Other men follow the example of a man with strong will, and he shapes his surroundings according to his own laws.

But even such a one, even the strongest, was once a child, and had at first no will, then a weak one, and not until late could the strong will be developed from this. This can only be done by means of opposition to the will of others. Therefore in education there is nothing of so much consequence as the management of the child's will while it is still manageable. Simple commands do not suffice, and only have the desired effect when they are conducted with consistency and never violated by him who gives them. The educator must also be a pattern to the child, not only preaching truth, but being sincere; above all, directing the child's will to the taming of the passions from which it is descended. It is important, therefore, that the child should see nothing, hear nothing, and especially perceive nothing, which could be detrimental to the education of its will. The impressions on the organs of sense must also be regulated. But the senses are at first not very susceptible. How is it with them ?

If the development of the senses in new-born children and infants is observed, the slight sensitiveness of the skin will first strike the beholder. To be sure, a scream can be caused in the very first hour of life by means of a blow or a rough touch, but this scream can hardly be conceived as an expression of a special feeling of pain. It is rather reflex, like the first breath, for infants can be handled in all sorts of ways which would be painful to adults, without reacting in the least. So, when the nose, lip, or hand is pricked, no sign of discomfort is noticed, frequently not even a movement; and yet, to try the sensitiveness of the skin, a needle was introduced so far that a drop of blood appeared. (Genzmer.)

I have not tried such experiments with children, but in other ways I have recognized the slight sensitiveness of infants. When the eye is touched, they close it much more slowly than they do later, and also imperfectly. Wetting the eye in the bath, too, does not cause the lid to close.

These and many similar observations can be carried on with every infant. After one or two days an increase in the sensitiveness of the skin is easily ascertained, and at the very beginning the child is in the highest degree susceptible to warmth. The first bath is at the same time the first agreeable sense-impression which the world affords the infant.

But the first perceptions of temperature seem to have much less of a direct specific psychogenetic meaning than the first perceptions of touch. Anaxagoras did not assert too much when he said that man differs from animals in having hands. A child's hands are the feelers of its soul. They are the pioneers of its army of longings, eager for the conquest of the world. By means of the excitation of the organs of touch—in the finger-tips and the lips—the infant receives the first intimation of things without him, and, by means of the difference of the sensations in touching its own skin and extraneous objects, the foundation is laid for self-consciousness on the one side, and for gaining knowledge on the other. The infant's fingers are in reality the instruments with which it strives to investigate everything which comes within reach. Its methods have the greatest similarity with the methods of natural philosophy. For the investigator isolates, takes to pieces, observes from all sides, and then endeavors to put together what he took apart. Every child is a born naturalist, and wishes to penetrate into the very essence of things. The importance of the touch appears best from the fact that, in certain cases, persons who early became blind and deaf, have, with the aid of the sense of touch alone, attained a relatively high intellectual development. But these cases are exceedingly rare, and the instruction is extremely laborious.

No one sense can take the place of another; an exchange is impossible in man, and one is only imperfectly represented by another. On the contrary, all the senses, even at the outset of life, share in the development of perception and sensibility, even the most undervalued, taste and smell.

In relation to the former, Professor Kussmaul, more than twenty years ago, in a short but interesting treatise on the "Spiritual Life in New-Born Children," gave several important observations which he made for the first time. He found that strong sensations of taste are distinguished from each other by all infants, since the effect when the tongue is moistened with a solution of sugar is quite different from that of quinine, vinegar, or salt. In these three cases, children, even directly after birth, make all kinds of grimaces and unmistakable signs of dislike, and the "sour" face is quite different from the "bitter," while the lively sucking movements, together with the expression of extreme satisfaction when sugar is offered, leave no room for doubting that the nerve of taste is endowed with a natural power of discrimination.

The old opinion, that the new-born child takes everything indiscriminately which is offered it, is erroneous. This is true only in the case of fluids with a weak taste. The child takes medicines without opposition only when they are sugared, as is usually done. And if some new-born children respond to an intense sweet with the expression of bitter, as I have observed likewise in older infants, the reason may be found in its surprise at the novelty of the strong sensation, for after the first trial more is wanted.

Every strong and new impression is disagreeable at the first instant, a kind of terror. Surprise at the strangeness of it prevents the child from distinguishing whether the feeling was agreeable or disagreeable. The adult too often has this experience. All new-born children take sugar gladly after the first feeling of surprise has passed. Then it is craved.

I found the same true of new-born animals, which show especially by their astonishment that, without having had any experience in tasting, they distinguish the most diverse substances—*e. g.*, camphor crystals, thyme, and sugar candy, since they gnaw and lick the latter alone.

The chicken, too, which has just been hatched, can distinguish the food which is placed before it by the taste. When I put before it the white of an egg cooked, the yolk cooked, and some meal, it picked at all three, one after another, as it did at the bits of egg-shell, grains of sand, spots, and cracks near it, but most frequently and eagerly at the yolk of the egg. I took this away, and when I put it back an hour after the first trial, the chicken sprang at it immediately and began to eat, persistently scorning the rest. At the first trial it had only tasted the white of the egg and swallowed a single grain of the meal. This preference for the yolk rests, therefore, upon an inborn ability to distinguish tastes.

The sense of taste, as Sigismund remarks in his delightful essay on "Child and World," is the first of all the senses to furnish clear perceptions, which are appropriated. The taste of the first milk which is taken remains, so that another kind is often only tried and then refused, after the strange taste and smell are compared with the first taken.

Memory and judgment first appear with certainty in the realm of the sense of taste.

But throughout the whole of life, and in its beginning also, the sensation of smell can not be easily separated from that of taste. Without any doubt, infants in the first hours of their lives can have no sensation of smell without taste, at least cannot distinguish them. For breathing through the nose, drawing in the air, and filling the nostrils with air, are indispensable to the excitation of the nerves of smell. Neither can be realized in the beginning, yet most children recognize very soon, after the breath is once in operation, whether they are receiving the same nourishment as at first, or another kind, and often refuse to make the acquaintance of a new nurse whose presence is disagreeable to them.

Otherwise, there are no sure experimental modes of determining the capability of infants during the first days for distinguishing fixed smells. The experiments with strong odors which have been tried in this direction have been uniformly successful only with sleeping children, and the sensory nerves of the organ of smell, ending together with the nerves of smell, might easily have been excited, so that they would have been the chief cause of the change in the child's physiognomy through a reflex action. It is known that young animals born blind are led principally by their sense of smell in seeking their first nourishment, the mother's milk. Experiments, especially those of Biffi and Gudden, show the relatively high development which the sense of smell attains in very young animals. For they show that when the nerves of smell are cut the little animals no longer succeed in finding their mother. They have to be nourished artificially. I have, likewise, made many observations on new-born animals, and have found that some substances are extremely repulsive to them, tobacco-smoke, for example, while others, camphor especially, are agreeable.

Seventeen hundred years ago Galen carried on a similar experiment. He brought a young kid, which had never seen its mother, into a room where several open dishes were standing filled with wine, oil, honey, meal, and milk. The young and inexperienced animal soon arose, shook itself, went from one dish to another, smelled of them all, turned to the dish of milk, and drank it up. In this case the sense of smell alone could have determined the choice, and the preference for the milk must rest upon an inherited remembrance.

Hearing and sight are incomparably more significant for the further development of the mind than the two lower senses.

In relation to hearing, it is necessary to note that all new-born human beings are deaf at first. Even the very strongest react from a loud noise only after six seconds, many not for a day, and very many not for two or three days. The awakening of the sense of hearing is recognizable by the trembling of the arms and the whole body, and then by a quick pulsation of the eyelid, when a loud noise or tone takes place suddenly. These reflex movements are the same throughout life in excitable people. If a pistol-shot is unexpectedly fired quite near, everybody winks quickly. The same, to be sure, happens from other causes, and a tone or a sound of slight intensity can be heard without the occurrence of the lid pulsation. But the non-appearance in very little children of any and all responsive movements, after strong sensations of sound, and their utter indifference to the same, are sure signs that they cannot hear, because after several days they respond to every loud noise in the accustomed manner.

The reason for the early deafness is well known. It rests on the fact that the external auditory passage is not yet open—its partitions are still united—and the middle ear contains too little air at first. The tender little bones of the ear cannot yet move. By means of breathing and swallowing, air first gets through the eustachian tubes into the cavities of the drum; add to this that at first the tympanum is very slanting—too slanting to be easily set in motion by the vibrations of the air. Hence comes the difficulty of hearing during the first days and weeks, and the profound sleep which not even loud noises easily interrupt.

But after the ear, through no other sense organ does the child receive so much that is important for its spiritual development. The backwardness in intellectual relations of children born deaf in comparison with those born blind shows the superiority of the ear over the eye in this relation.

At the beginning of life it is, as a rule, the voice of the mother and the nearest relatives which furnishes the first impression of sound. Very soon these voices are distinguished, tones and noises responded to differently. It is especially interesting in the second month to compare the quieting effect of songs and lullabys with the extraordinary animation at hearing dance-music. Certain noises too, like *sh*, *st*, and a deep man's voice, cause quiet, a cessation of screaming, and a new effort of the attention, and the infant can be made to scream by a strange, very strong, sharp noise, such as a locomotive whistle.

All these observations, which might be easily multiplied, show how early the child distinguishes ear impressions, in spite of its first deafness.

The same is true for impressions of light; at first there is a kind of dread of light, inasmuch as only twilight or a weak artificial light is endured. When a candle is brought near, the new-born child squeezes its eyes firmly together. Light and dark, or at least "very light" and "very dark," can be distinguished; indeed, the activity of the eye is exhausted by it at first. Colors, forms, distances, differences in size, motions, are not recognized at first. The movements of the eyes are still quite irregular like those of the hands. One looks toward the left, the other toward the right. One is open, the other shut. One is still, the other moves. It appears natural that among all the manifold movements of the eyes they should be turned simultaneously to the right and left. The conclusion must not be drawn from this curious behavior of the first six days that there is a natural symmetry in the contractions of the eye-muscles. Symmetry is acquired slowly. The empirical theory of the perception of space, especially advocated by Helmholtz, receives strong support from the facts established by me with unusual care. There is no consciousness of space even after three weeks. It is possible only through experience. At first the field of sight is composed only of light and dark patches, and there is only a perception of light. Yet even this excites the attention, so that many children, one day old, turn their heads toward the window, which I nevertheless observed for the first time on the sixth day.

Then begins staring, which is frequently but erroneously taken for seeing. With fixed gaze, the infant looks into vacancy, so that it might be thought it was locating an object, all the more as a candle-light is stared at continuously by most children after the ninth day. But it is easily perceived on a closer examination that the child does not see. Only when the light is brought in the direction of the staring does the perception of it seem to exist. The look is not directed to the light until after the third week, and then for the first time the inexperienced eye follows it, if it is moved slowly, partly with movements of the head, and partly without. But how small a share the understanding has in this can be seen from the fact that frequently the turning of the head and the direction of the glance are quite opposed. Longet has remarked, too, that deaf people without great intelligence follow with their eyes a candle-light which is moved about. Nevertheless, the countenance of a child, a month old, acquires a remarkably knowing expression when it looks with both eyes at once on a slowly moving object like a swinging lamp, and moves them simultaneously with it. The stupid, almost animal expression comes again afterward and disappears only in the second quarter-year. The appearance of the human spiritualized physiognomy is really conditioned by the independent location of clear, bright objects, which is now beginning. Accommodation, or the power of voluntarily causing plane surfaces standing at unequal distances from the eye to reflect themselves clearly upon the retina, one after another, is then in process of development, and the unsymmetrical movements of the eye gradually cease entirely.

Now, also, begins the ability to distinguish colors. One child prefers yellow, another red; but all dislike black and very dark colors; likewise a dazzlingly bright color. It is difficult to determine when the finer shades of color and their degrees of brilliancy are first clearly recognized, and the time varies with individuals. One child learns to distinguish the tones of the scale very early, and another not after many years. I know no case of a child who could always correctly point out the colors red, green, yellow, or blue, before the beginning of the third year. But in the twenty-sixth month this degree of knowledge of colors can be attained by practice, and blue will be the last to be correctly named.

The distinction of forms, too, advances extremely slowly. The experiences of such as are born blind, but have their sight restored by operations when they are able to talk, are of remarkable importance here. They show that the ellipse cannot be distinguished from the square, nor the sphere from the cube, by means of the eye alone, but only after the touch has been exercised. The same is true, without doubt, for every little child.

Many observations show how defective is the estimation of distances during the first years. The attempt to seize the moon is well known. In this relation even long practice seems to be successful only when the child stays a great deal in the open air, and great mistakes in estimating distances remain throughout life, unless special practice is had in the matter.

The same is true for the recognition of differences in size. A child, even in the third year, attempts to crowd its large playthings into a small receptacle, to put great pieces of bread into its little mouth, and to span the largest objects with its tiny hands.

It is further of peculiar importance to every theory of knowledge, that the first perceptions of change of position within the field of view, the disappearance of a bright surface from the same, as when a lamp is extinguished, and the appearance of a new, bright object, as when a lamp is lighted, makes a deep impression on the inexperienced infant every time. During the first two months, even the quickest approach of a hand to the child's face is not noticed. Only after the third month comes the much discussed pulsation of the lid, which thereafter throughout life occurs regularly at the unexpectedly quick approach of any object to the eye, even when the eye is not touched and a pane of glass is before it.

The difference between hereditary and acquired actions in seeing may be clearly recognized from this behavior. For example, the contraction of the pupils on the appearance of a bright light, and their enlargement when the face is shaded, which every infant shows, are hereditary. On the other hand, the quick opening and closing of eyes on the sudden approach of the hand are acquired. It is a defensive motion, conditioned by the disagreeable surprise, for the child knows nothing of danger at this age. Every defensive motion becomes later, through constant repetition, habitual, and then reflexive, like other defensive contractions of the muscles.

By the multiplication of similar observations and experiments in very little children, it is possible to follow the advancing development of sight in detail. This also applies to the other senses; only a great deal of material must be collected before the sentient groundwork of the child's spiritual development can be clearly manifested. Helmholtz is right in saying that observations on new-born animals, carried on accurately and critically, are in the highest degree desirable, in order, above all, to decide on the admissibility of the dominant theories of space. The sense-perceptions are the only material from which every human being builds up its world. Their content, that which is perceived, is likewise the foundation upon which the feelings and passions grow. The child's emotions, its likes and dislikes, the awakening of its sense of duty, the beginnings of its character development, the first dawn of its talents—all these depend in a direct line on the development of its senses. But so little that is legitimate or has any connection has been as yet discovered in this realm, that an exposition of this side of psychogenesis would result merely in a compilation of disconnected facts.

The only medium of explanation, the child's talk, is to be investigated previously. And this study is most important to the knowledge of the child's spiritual condition and the operations of its intelligence. It promises the greatest enlightenment concerning the dark secret of the soul's development. Man announces the existence of his reason, not only in the safest way, but in the only safe way, by the independent management of language. I have therefore spared no trouble to put down on paper daily everything which can be conceived as a lingual expression, every noise which can be fixed somewhere, within the first two years, and shall shortly publish in a separate work a history of the development of speech, based thereupon. Only single instances of general interest can be brought forward here.

Above all, the most careful observation of the mien and behavior of the child who cannot yet talk is important in answering the question, "How have I learned to talk?" or that associated with it, "How did the understanding develop?"

Too great an influence has been constantly attributed to imitation in explanation of the mimical movements and gestures of the child. The first smile and laugh, for example, are in no wise imitative, but hereditary, like the scream and moan for pain. Many a gesture, like placing the hands together when making a request and nodding at being carried out doors, are learned through training; affirmative motions of the head are acquired partly through imitation, partly through training, and partly, apparently, are inherited.

It is exceedingly difficult to exclude from the child the influence of imitation, one of the mightiest impulses of nature, and to distinguish it from hereditary transmission when it is not excluded. The study of the features and gestures of those who are born blind is of the greatest service here. But persons who are born totally blind are rare, and those who become blind later show a less decided play of features than those who have their sight, because imitation is then lacking; but the remembrances of imitated looks abide in them, so that it is hard to distinguish inheritance and acquisition.

How is it with talking, with articulate speech, which is recognized by all parties as the single radical difference between man and animal? It will scarcely be asserted that a child can be born who can speak immediately, for surely no child can learn to talk without imitation. But articulate speech should not, therefore, without further consideration, be absolutely designated as something acquired and by no means hereditary. For all properties of the organism (which continually and periodically repeat themselves) are finally called hereditary. It can be said that the quality of being hereditary is one form of the law of inertia, or of the power of inertness in the realm of organic nature. Whatever continues regularly through many generations for a long time is called hereditary. It is a matter of indifference to the ordinary understanding whether the question is concerning the organs which govern the formation of tone, as the larynx and tongue, or concerning such actions as screaming and singing, or even the voice itself. If through hundreds of generations, not language, indeed, but speech, keeps on, partly improving, partly deteriorating, there is no reason for not calling it hereditary. Hereditary and inborn are not synonymous terms. The teeth and the beard are hereditary, but not inborn; only a tendency to them is inborn. So, too, speech is hereditary and not inborn; but the tendency, the predisposition, is born in the child. If any part of the extremely complicated mechanism of speech is lacking or defective—if, for example, the vocal chords or the ear refuse to perform their task, or if the tongue is paralyzed—the child does not learn to speak articulately as is customary; but a proof that the tendency to speak exists, lies in the fact that the child often learns quite the same language as its friends, yet in another way, frequently by indirect methods, such as writing, finger-language, etc.

There is no fact which demonstrates as clearly as this the original independence of the faculty of speech from the separate organs of speech, and yet the dependence of the highest development of speech on the integrity of the vocal mechanism is recognized, for the slightest defect in the organs is audible. But it is not the organs which determine speech, but *vice versa.* The need of communication created the organs of speech; these were transmitted, and then had a direct influence upon the child's manner of speaking.

If the child's utterances are noticed daily from its birth until it can use the mother-tongue independently, the Ariadne thread will be found, which leads through the perplexing labyrinth of phenomena. There is hardly any greater intellectual enjoyment for the psychologist than observing the early period of human life, within which speech is developed from the first reflex cry, at first indiscernible, gradually flowing slowly and uninterruptedly from undiscovered sources; then gradually gushing forth more quickly and with apparent irregularity; next slowly freed from unnecessary accompaniments, more orderly and plain, clear and fluent, until finally the quiet stream of coherent speech testifies to the rule of intelligence over instinct, to the victory of the will, and to the formation of thought.

Whoever holds to observations, independently of any opinion concerning the origin of speech, will recognize how erroneous in part the dominant notions are; as, for example, when the child, before it learns its parents' or teacher's language, must forget its own—a peculiarly articulated childish talk, which it found for itself.

At first only vowels can be uttered, particularly ah and ā. But, in spite of their uniformity, the utterances within the first five weeks are so different that from them alone the child's spiritual state is known. The periodically interrupted screaming, together with contracted eyelids when hungry, the persistent whimper when cold, the high, piercing tones when in pain, the laughter at a shining button, the crowing for joy, the peculiar announcements of a wish to change position, connected with animated movements of the arms, are varied, easily distinguishable, acoustic expressions of life, partly reflex, partly instinctive.

In the seventh week I heard the first consonant, m. The indistinct utterances of the infant at this time, particularly during the first half-year, cannot be written down. The child also moves all the muscles which are at its disposal, without any external cause. To these belong, above all, the muscles of the larynx, tongue, and lips. It often happens, when the indefatigable movements of the tongue are made at random, that the mouth is wholly or partly closed. Then, in breathing, the stream of air makes its way out, and thus many sounds arise involuntarily, even such as do not occur in the English language, and in whose repetition the infant delights. Most of the consonants which arise through the irregular use of the tongue and lips can be fixed as little as the movements of the limbs, continually becoming more animated, continuous, and varied, can be delineated or described. In the seventh month only m, b, d, n, r are plain, occasionally g and h, and very rarely k in a prattling monologue.

Now the voice is gradually modified, so as to be more surely an expression of the mood. If the child longs for a new object, it not only points out the direction with outstretched arms and a glance, but makes known its wish by the same noise which it utters before taking nourishment. This combination of intricate movements of the eye, arm, and vocal muscles is a great step forward. At the same time the syllables pa, at, ta, ba, da, ma, na, which almost all children of all races utter, become plain and oft-repeated. They have no meaning, and are only the involuntary result of the gymnastic exercises of the vocal apparatus.

Toward the end of the first year the first imitative sounds usually begin, but in the most imperfect manner. Many children are skilled in them earlier. But this early and clever imitation or mimicry is probably less a sign of intelligence than of lack of mental independence. The latter is, in any case, recognized much more at this time by the nascent power of distinguishing audible words. The child turns its head when it is called. It is easily trained to perform little tricks, such as giving its hand, and the like. Yet, at the beginning of the second year, the infant's comprehension of its nurse's jargon is usually not greater, and its repertory of words is not richer, than that of a well-trained hound for its master's utterances. The enormous intellectual difference between the child and the trained animal is shown less by the fact that it associates more thoroughly the idea of a certain object or a certain variation with a sound which it hears than that it can itself express a syllable, a word, although in a whisper, so that the corresponding sensation recurs. One of the first expressions of the kind, with almost all children, is atta. In some countries the parents train the child so that by "atta" or "atte" it means one thing, in others it has quite a different meaning. The association of the syllables "pa" and "ma" with the parents, or other grown men and women, is taught the child with great pains months after it has uttered the syllables devoid of any meaning.

The imitation of sounds makes considerable progress in the third half-year. Many objects are now also rightly pointed out on inquiry, after they have been constantly and repeatedly shown and named; the child likewise rightly uses by itself mutilated forms of the words it has frequently heard; for example, "peas" for "please," when wishing something, "mik" for "milk." It does not strike me that such primitive attempts of the child to employ the words it has often heard, like a sudden enlightenment, stamps it at once as a rational being. The gestures and bearing are still the most important medium of the understanding, and such distorted syllables, attendant phenomena.

On the other hand, the first sign of the nascent formation of ideas is undoubtedly noticeable in the highest degree because of its unexpected appearance. The child had formerly regularly said "atta" when carried off or taken out. Now, when the lamp was lighted at evening and somewhat protected by a shade, it likewise said "atta." This happened in the fifteenth month. Whether the word was heard frequently when going out, and appropriated to that or not, it had never been used in connection with dimming a light. The formation of the idea is in any case shown in this way. The child had itself discovered a similarity in the strikingly different incidents of going out and dimming a light. It represented the disappearance of the most dissimilar impressions of sight by the same sound. Then the closing of a fan and the emptying of a glass were soon designated in the same way. There is, then, reflection without language, for in these cases "atta" was the only word which the child employed at the time it was forming ideas. Reflection, however, appears much more through gestures and actions than through sounds, in spite of the fact that at the beginning of the fourth half-year the articulation had been very much improved through imitation. To be sure, all the sounds of the language could not yet, nor even in the third year, be rightly and voluntarily employed, but they come of themselves to a certain extent, when the child indulges its inclinations and, for example, spreads open a newspaper and imitates the reading it has so often noticed. At this time the intelligent child understands more words than it can repeat, but it repeats many which it cannot understand in a parrot-like way, without any instruction and for its own enjoyment, particularly such words as delight its hearers. The demeanor of the latter is not only of consequence, but prescribes the child's choice of expressions. By this means the articulation is developed more quickly, and the incredible activity of the tongue, whose evolutions no adult can imitate, is, at the same time, of use to the child learning to play. Every little child of any nationality can learn to speak any language perfectly — the Italian, Russian, the Esquimau, Arabic — while in later life the finer shades of pronunciation are no longer easily acquired. But the child learns its mother-tongue by a different method from that used by the adult in mastering a foreign idiom. It begins by understanding the meaning of what is said, and learns to pronounce the words afterwards. The scholar, on the other hand, learns the pronunciation of the sounds first, learns the words by heart, and finally the meaning of strange sentences. The so-called child's talk is composed of inarticulate sounds, of gestures and actions, and of distorted fragments of language, mutilated almost beyond recognition, and the child employs only a few onomatopoetic expressions which represent no language. Bow-wow, cock-a-doodle-do, mew-mew, are said before children, and their memory, not yet overladen, is impressed by what is perceptible. The wonderful creative fancy of the child quickly masters the new animal voices, and makes blocks of wood or paper dolls talk together, before the child itself can speak.

The preparatory work which the child requires is so manifold that the process of learning to talk seems incomprehensible even to the most sharp-witted. The child screams, laughs, hums, sings, smacks, crows, squeals, etc., and understands what is said to it long before it speaks. And after it has touched, looked, listened, and tasted countless times, after it has pleased itself with manifold attempts at imitation and has then become weary, after the time when it could not repeat what was said, and later would not— then it speaks of its own accord. But what it says does not have a single meaning, but one word stands at the same time for several entire sentences. "Hot" to-day means "The milk is too warm for me;" yesterday it was, "The stove is too hot; I must not touch it." Next comes the time when two, then three, words are spoken together. At last comes the first little story of the two-year-old: "Julia breaked doll." It is still far from this beginning to a correct construction of sentences. The use of prepositions, verbs, and articles is very difficult for many months, but the way is opened. The child's infinitives and proper names gradually disappear, the construction gradually becomes more correct, until finally the child gives more striking evidence of its reasoning faculty from sensible questions than from answers. The first questions relate to space. The child asks, Where? whither? also which? long before it gives any meaning to When? Why is understood and used later still.

If the poverty of a child's language is compared with that of an adult who has suffered from disease, there will be found a parallel which is uncommonly interesting and surprising because of its completeness. Various kinds of derangements in speech caused by illness, and not a few in number, are miniatured in the child. During an illness an adult is no longer in a condition to speak correctly; during childhood the undeveloped being is not yet in a condition to speak correctly. In one the existing functions are disturbed, in the other the functions of the phonetic system and the vocal organs are not trained. The one state helps to understand the other. I must forego an explanation of this matter in this place, because the rich material allows of no abridgment. It was only my wish here to sketch a few of the essential and fundamental conditions of the spiritual development of the child apart from current and fashionable opinions, and to bring into prominence the extraordinary significance in the study of the child's soul. Its poetry remains untouched. Nothing of the magic of a glance from the child's eye will be taken away in the opinion of the mother if the father interests himself in the movements of this eye in which pure truth abides.

When I look at my work, at the efforts repeated daily for years to fix upon the incidents of development, it seems to me as if I were standing on the bank of a shining stream which is constantly widening, constantly flowing on more quickly, and into whose clear water I look without finding the bottom, even when no surging waves disturb the surface. We stand amazed and dumb before the eternal enigma of existence. Before we are aware, the helpless child is transformed into a being which resembles us. Our own youth, like that of our children, passes by before we know it. We are astonished at development, and do not understand it.